

STUDIEN ÜBER DIE SPEZIFICITÄT, DEN ALTRUISMUS UND DIE ANAPLASIE DER ZELLEN; MIT BESONDERER BERÜCKSICHTIGUNG DER GESCHWÜLSTE. Von Dr. DAVID HANSEMANN, Assistenten am pathologischen Institut und Privatdocenten an der Universität zu Berlin. Mit 13 Tafeln und 2 Figuren im Text. Berlin, 1893: Verlag von August Hirschwald. (Studies of the Specificity. Differentiation and Deviation of Cells, with special reference to Tumors.)

In this magnificent study of the cell itself, Hansemann has contributed to scientific literature a work which every student of histology can well afford to peruse. As a result of a series of observations he has been able to confirm certain already accepted theories, to modify others, and, finally, to establish some new facts.

He expresses regret in his prefatory remarks that he should differ from his master, Virchow, on certain questions concerning the specificity of cells; and by way of apology quotes from the founder of cellular pathology: "Ich erkenne gern an, dass in manchen Richtungen, zum Beispiel in der Kenntniss der karyokinetischen Vorgänge, so grosse Fortschritte gemacht sind, dass dadurch ganz neue Gesichtspunkte gewonnen wurde."

In the first chapter he takes up the subject of the specific character of cells. He discusses the question of cellular metaplasia, and presents the two opposed theories as to whether a given kind of cell becomes changed into a different kind, or whether a cell becoming associated with different conditions becomes itself changed by accommodation. In this line is also brought up the question as to whether a connective tissue cell can become converted into an epithelial cell, according to Virchow, or whether the epithelial cells are transformed into connective-tissue cells, as Recklinghausen claims.

The author has devoted much time and patience to the study of the nuclear mitoses. The methods of fixing and studying the karyokinetic figures are given, and the question of histological accommodation is fully discussed. He observes that during the process of

division the cell assumes more the character of the kind and represents less the individual. This he attributes to the fact that during division every other function of the cell is in abeyance. It neither assimilates nor secretes. The observations of Martinotti would tend to confirm this view, for he found that certain colored salts, as sodium indigo-sulphonate, when injected among kidney cells, were readily taken up by the passive cells, whereas those in the process of division refused to absorb the salt.

Hansemann also points out the peculiar and characteristic process by which the various cell varieties divide. He has observed that in the processes of regeneration, of hyperplasy and inflammation each cell retains its peculiar type of division phenomena. These specific properties are so constant that in every variety of tissue are peculiar features in the karyokinetic figures which make possible a differentiation of tissues based solely upon the form of the mitoses.

The nuclear changes in cell division are thoroughly discussed. A section is devoted to the duration of the time required for division of the various kinds of cells. And, as a conclusion, he is able to confirm by observation what Bard first offered upon theoretical grounds: *Omnis cellula e cellula ejusdem generis*.

He rejects entirely the doctrine that epithelium can develop from connective tissue or that connective tissue can develop from epithelium. That ciliated epithelium can become converted into flat epithelium; or that in cysts of the spermatic tubules of the testicle the epithelium may be converted into squamous epithelium, is well known, and designated as histological accommodation. It would, however, he claims, be incorrect to regard such cells as belonging to the epidermis variety. It is true that connective tissue can form bone or fat tissue, but Hansemann believes with Ziegler that not every connective tissue can form bone or fat, but that these are properties of special varieties of connective tissue. For example he shows that the myxoid tissue of the fetus becomes changed into fatty tissue, excepting the myxoid tissue of the eyeball—demonstrating that there are at least two varieties of this tissue. He calls attention to the great differ-

ence in connective tissue in different parts of the body: that of the skin and ovary, for example; in which, too, the mitoses show a very great difference. He is even inclined to regard the connective tissue of each organ as specific, especially on the ground of the form of the mitoses.

In view of such a specificity of cells it becomes necessary to consider how these many varieties of tissue come about from a single cell. The author takes up these questions and discusses them from the standpoint of histological accommodation, and from the view of inherent vital differentiation of cells. Here he lays great stress upon a symmetrical mitosis, and shows that in the process of cell differentiation a new variety of cell originates by an unequal division of a parent cell; and that, as this offspring continues to divide equally, it produces an organ or a peculiar group of cells. This principle of asymmetrical division is based upon the theory that each cell contains a variety of plasmata, and that any division resulting in two cells in which the constituent plasmata are equally divided, propagates the parent type; but when an unequal division of these constituents occurs, a new variety of cell is the result.

In the chapter on the altruism of cells he evolves this beautiful doctrine of the plasmata. The original ovum cell contains these different kinds of plasmata in a definite proportion, each having its definite function. When an unequal division occurs, each cell has its complement or antagonistic cell which later represents a particular tissue or organ. As an evidence of this altruism in the fully developed body, the author shows that no organ, the function of which is known or unknown, can be destroyed without causing disturbance among its antagonistic or complementary cells.

After considering the "Altruismus der Zellen" in the light of actual observation, the author in closing states that his observations only tend to confirm the doctrine which Darwin has already founded in his hypothesis of pangenesis.

The final chapter of the work is devoted to the anaplasia of cells, and deals largely with the question of tumors. This chapter is finely

illustrated with micro-photographs. A number of these photographs show the bodies which some observers have regarded as parasites. They are, according to Hanseemann, undoubtedly parts of mycotic nuclei, and are found in cells in process of division. The doctrine of Adamkiewicz, that all carcinoma cells are parasites, he regards simply as a "curiosum."

He designates as anaplasia any deviation from regular heredity, and makes it dependent, therefore, upon the asymmetrical division of cells with reference to their various constituent plasmata. By virtue of the anaplasia of cells, new organs are formed; and the development of tumors is dependent upon this same principle.

The whole work shows careful and painstaking research in the field of normal and pathological histology. We need in surgery more investigation of just this sort to make clear the nature of certain diseases, our knowledge of the pathology of which has been grounded in vague and unsubstantiated theories.

JAMES P. WARREN.

THE THEORY AND PRACTICE OF MEDICINE. Prepared for Students and Practitioners. By JAMES T. WHITTAKER, M.D., I.L.D. With a chromo-lithographic plate and 300 engravings. New York: William Wood & Co., 1893.

But a few years ago works on the theory and practice of medicine were devoted largely to symptomatology and therapy. The modern tendency is to lay especial stress upon the pathology of diseases. With this as a rational basis the treatment can be better worked out. And as our knowledge of pathological conditions accumulates, empiricism in therapeutics becomes obsolete.

In the preface of this work which now lies before us, the author states that in the preparation of the book the most work has been put upon the infections as the most frequent and dangerous, at the same time the most preventable, of all diseases; and in the study of the infections the most space has been devoted to cause and diagnosis, for the reason that a knowledge of the cause establishes pre-